National Institute of Environmental Health Sciences

Vulnerability assessment of climate-induced water shortage in Phoenix

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Abstract:

Global warming has profound consequences for the climate of the American Southwest and its overallocated water supplies. This paper uses simulation modeling and the principles of decision making under uncertainty to translate climate information into tools for vulnerability assessment and urban climate adaptation. A dynamic simulation model, WaterSim, is used to explore future water-shortage conditions in Phoenix. Results indicate that policy action will be needed to attain water sustainability in 2030, even without reductions in river flows caused by climate change. Challenging but feasible changes in lifestyle and slower rates of population growth would allow the region to avoid shortage conditions and achieve groundwater sustainability under all but the most dire climate scenarios. Changes in lifestyle involve more native desert landscaping and fewer pools in addition to slower growth and higher urban densities. There is not a single most likely or optimal future for Phoenix. Urban climate adaptation involves using science-based models to anticipate water shortage and manage climate risk.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3003010

Resource Description

Communication: ☑

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☑

audience to whom the resource is directed

Policymaker

Exposure : ☑

weather or climate related pathway by which climate change affects health

Food/Water Security

Geographic Feature: ☑

resource focuses on specific type of geography

Desert, Freshwater, Urban

Geographic Location: ☑

resource focuses on specific location

United States

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Medium-Term (10-50 years)

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content